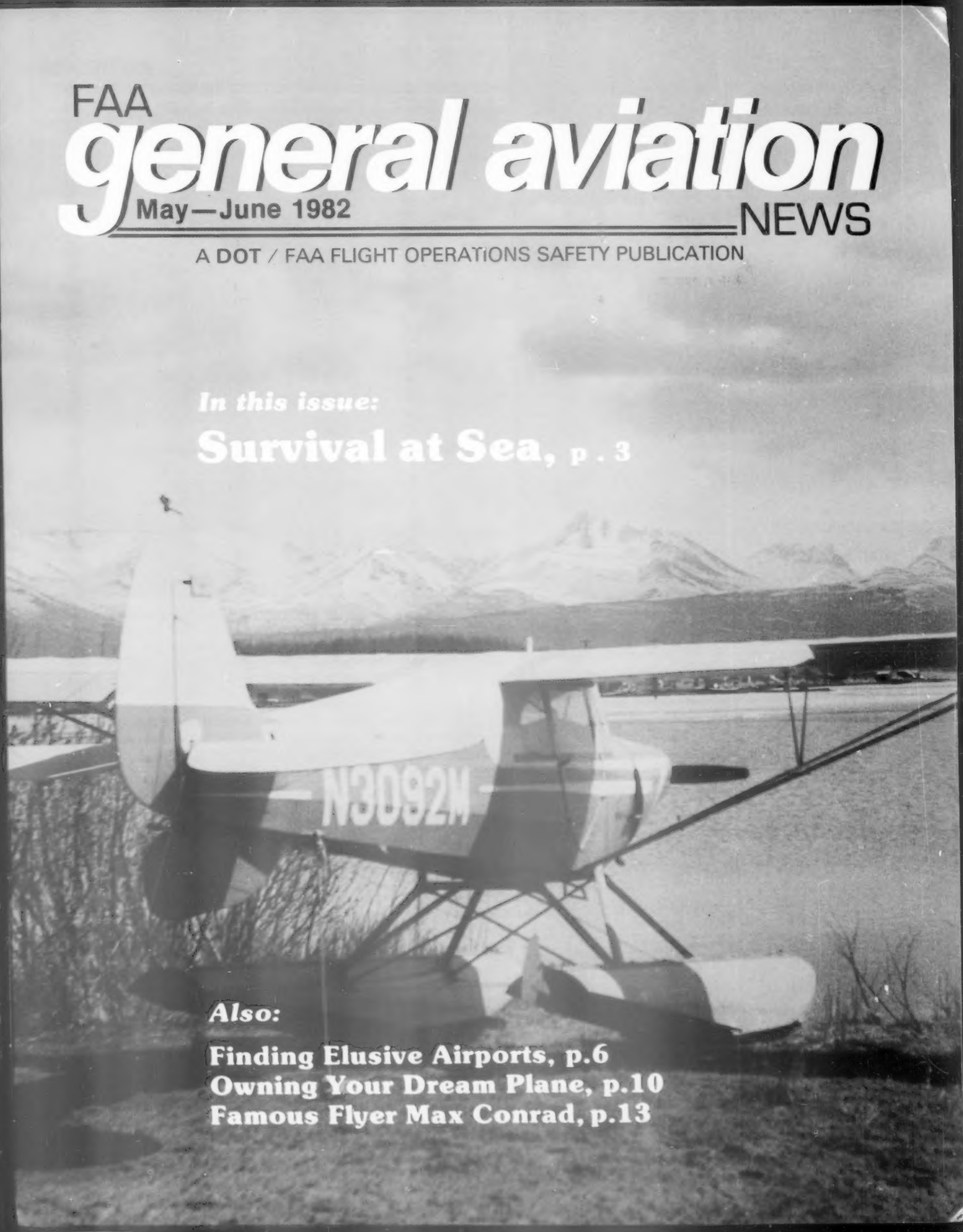
FAA
general aviation NEWS
May—June 1982
A DOT / FAA FLIGHT OPERATIONS SAFETY PUBLICATION



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U.S. Department of Transportation
Federal Aviation Administration

FAA GENERAL AVIATION NEWS

MAY-JUNE 1982
Volume 21, Number 3

Drew Lewis, *Secretary of Transportation*
J. Lynn Helms, *Administrator, FAA*
Walter Luffsey, *Assoc. Admin., Aviation Standards*
Kenneth S. Hunt, *Director, Flight Operations*
Bernard A. Geier, *Chief, General Aviation and Commercial Division*
David Gelfan, *Editor*
P. A. Duncan, *Assoc. Editor*, Louise Oertly, *Ass't Editor*

FAA GENERAL AVIATION NEWS is published by Flight Operations, AFO-807, Federal Aviation Administration, Department of Transportation, Washington, D.C. 20591, in the interest of flight safety. The magazine is designed to promote safety in the air by calling the attention of general aviation airmen to current technical, regulatory and procedural matters affecting the safe operation of aircraft. Use of funds for printing FAA GENERAL AVIATION NEWS was approved by the Office of Management and Budget through August 31, 1983. All printed materials contained herein are advisory or informational in nature and should not be construed as having regulatory effect. The FAA does not officially endorse any goods, services, materials or products of manufacturers that may be mentioned. **Certain details of accidents described herein are altered to protect the privacy of those involved.**

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BRIEFS

WORLD'S FAIR TOWER. FAA has re-opened the recently closed tower at Knoxville's Downtown Airport to serve an influx of traffic expected for the World's Fair. Pilots wanting an aerial view of the Fair should call DKX tower prior to entering the airspace over the Fair below 3,000' AGL. For pilots with tower permission to overfly, a counter-clockwise pattern is recommended, and pilots are reminded that minimum safe altitudes prescribed in FAR 91.79 apply (e.g., except when taking off or landing, an altitude that permits a glide to a safe landing in the event of an engine failure; 1,000' above the nearest obstacle within a 2,000' radius over a congested area).

IMPROPER PROPPING. Owners of ultralights who install their won propellers are cautioned to make certain the prop is centered on the shaft "boss." Otherwise it will vibrate excessively and fail, as it did in a recent ultralight accident where propeller de-lamination occurred. The services or guidance of a certificated mechanic will prevent this hazard.

ON GUARD AT LAGUARDIA. Beginning June 14 New York's LaGuardia Airport will be closed from midnight to 0655 (EDT) Mondays through Fridays to permit paving of runways 13/31 and 4/22. For weekend and holiday traffic LaGuardia will be open on a 24-hour basis. The repaving is expected to be finished by October 29. In the meantime pilots using LGA during operating hours should keep an eye out for construction equipment.

NUMBERS GAME. Comments are invited on a Notice of Proposed Rulemaking that would change the requirement for N-numbers on rotorcraft. Currently rotorcraft must have 20-inch numbers on the bottom and two-inch numbers on the side. If adopted, the rule would require 12-inch numbers only on the side, the same as fixed-wing aircraft. Compliance would not be required until the rotorcraft was repainted or the present N-numbers needed restoring or changing. Copies of NPRM 82-6 may be obtained from FAA Public Affairs, APA-430, 800 Independence Ave., S.W., Washington, DC, 20591. Send comments no later than July 30 to FAA General Counsel, Docket No. 17528, AGC-240, same street address.

UNCHAINED. Securing parked aircraft with chains may damage structures if no provision is made for wing flexing in strong winds. Several wing-failure accidents in Alaska have been attributed to lack of flex in tie-downs. FAA recommends using a good quality rope. Consult AC 20-35B, "Tie Down Sense," free from DOT Publications Branch, M-443.1, Washington, DC, 20590.

Survival at Sea

Planning for an Unplanned Water Landing

Shortly after 8:00 p.m. on December 18, 1981, word was received at the U.S. Coast Guard Search and Rescue Center at Portsmouth, Va. that an Air Force F-4 was overdue and presumed down in the Atlantic. Within minutes search and rescue operations were under way. The aircraft was last reported about 30 nautical miles off the North Carolina coast at Wilmington. However, despite a massive air and sea search involving hundreds of aircraft and ship hours and covering nearly 60,000 square miles, the surviving airman was found only by accident six days later by a commercial fishing boat. Considering the extent of the search effort and the fact that the missing airman had been provided with a veritable James Bond-type of survival kit, you might have anticipated that rescuers would have an easy time finding their target. But Search and Rescue activities, according to the Coast Guard, are delineated on the assumption that the last known position report is correct, and that standard distress procedures will be followed—i.e., that a crippled aircraft will make for the nearest shore. Because of radio failure and other problems that was not the case in this accident.

The offsetting factor was that the splashdown point was about 160 miles southwest of the aircraft's last known position—placing it outside the normal search area. The six-day ordeal of the lost airman points up the unpredictability of survival conditions at sea and the need for weighting the odds in your favor as heavily as possible.

In the case of the missing military airman, his troubles began immediately after ejection, when he parachuted down to a stormy sea in total darkness. His one-man Navy blue life raft, to which he was attached, inflated automatically, and he managed to climb on board, despite six to eight foot waves pounding him on all sides. The rough water plus the darkness led to his losing many of the items in his survival kit, and this loss plus radio malfunction proved critical in the days ahead.

Lost items included some of his flares (including a packet of cigarette-sized projectiles that could be fired 1,000 feet into the air before igniting), his flashlight, and emergency water. His yellow sea dye marker ruptured prematurely inside the raft. About all he could do that first night was to seal the velcro closure on his canopy to keep from being swamped and wait for daylight.

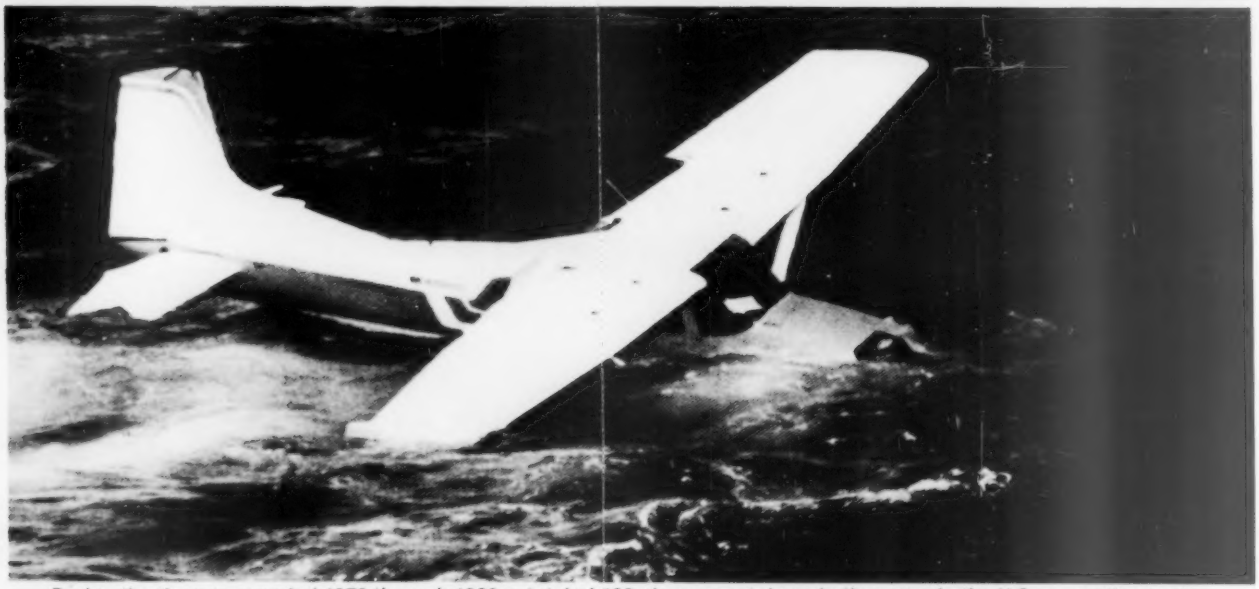
The next morning, as the sun broke out of the clouds and the weather improved, the airman utilized the signaling mirror from his survival kit in accordance with his training. A freighter appeared and continued on her way without paying any attention to him, and later a tugboat churned by fairly close. He saw no one on deck and no one responded to his furious signalling at the wheelhouse. The only aircraft he saw were at high altitude.

After the first 24 hours the airman realized that he could be in the raft for days and that he had to avoid succombing to despair. So he organized a schedule which he followed as closely as possible. Early each morning he "drank" water by licking up the uncontaminated moisture that condensed on the inner flap of his spray shield. He knew from his training that dehydration was the major threat to his survival and that eating food would further deplete his body fluids, so he put aside the thought of catching fish or seabirds.

He spent regular periods each day scanning the sea and the sky in all directions and signalling with his mirror whenever he saw an aircraft or ship. In between his "work shifts" he rested (he was unable to sleep well at night because of dampness and chilling, which made him shiver almost constantly) and sheltered himself from the strong rays of the sun when the storm clouds finally abated. He kept his mind as calm as possible, thought about his family, hoped they would not be too upset, and conserved his energy by continually reassuring himself that rescue was only a matter of time.

His composure was broken only on the fourth day when he observed a large, ominous dark shape pass under his raft and the thought "Shark!" leaped into his mind. Believing that some of his survival gear, which was attached to his raft and bobbing alongside, might be attracting underwater attention, he hastily cut it loose. Then he forced himself to lie quietly in the raft until the threat disappeared.

On the sixth day at sea he spotted a small fishing boat and watched it



During the three-year period 1978 through 1980, a total of 133 planes went down in the water in the U.S., according to the National Transportation Safety Board. Twenty-seven accidents were fatal (about one out of five) with 42 fatalities.

approach until he was close enough to read the name *Odyssey* on the bow. The vessel continued on its course despite his constant signalling with the mirror. In desperation he stood up on his small raft and waved his arms frantically—so much so that he lost his footing and fell into the water. Ironically the sound of his splashing accomplished what all of his visual signalling had failed to do: it caught the attention of the fishermen, who promptly came alongside, fished the airman out of the water, and took him to a hospital in Charleston. His own "odyssey" at sea had taken him nearly 25 miles south of splashdown. He was suffering from exhaustion, dehydration, a skin rash and sunburn; but he recovered within a few days.

The airman's experience, however fortunate its outcome for him, is fair warning to any pilot who imagines that survival at sea, following a ditching, is a simple matter of waiting a few minutes for a rescue plane to speed to the scene. That *could* happen, if the ditching site is known or if an ELT is functioning and received, and if the sea is relatively calm and not too cold, and if there is sufficient light ... which adds up to a lot of big "if's." Coast Guard records show that when rescue of an airman at sea is not accomplished within the first 24 hours, his chances of survival diminish rapidly. Hence the importance of being prepared to survive at sea on your own and to participate in the search and rescue effort.

Some important considerations regarding rescue at sea which were underscored by the military airman's experience include:

Conspicuity. A human being on the surface of a large body of water is an exceedingly small object and difficult to spot, and the likelihood of rescue by itinerant ships or planes is extremely chancy. The downed military airman, who was never much more than 50 miles from shore, could see no one on board the few ships that passed near him, and no one saw him. Apparently the use of radar has replaced human eyes for lookout purposes pretty generally. Flares can be seen for as far as 40 miles at night, and they do increase your chances of being observed by a large margin—unless obscured by cloud cover.

Raft vs. no-raft. According to the Coast Guard Search and Rescue Manual, if the survivor is immersed in the water an effective air search must be conducted at altitudes *below 500 feet*—a requirement which hampers the search effort. The observer's range of vision is reduced and his visual acuity is impaired because of the speed of passage over the observable surface.

When survivors are known to have a raft, the recommended search altitude is 800-1,500 ft. If dye markers or flares are expected to be in use, search flights can be made as high as 2,000 feet, which increases the efficiency of the operation immeasurably. The Coast Guard estimates that for searching a circular area with a radius of 100 nautical miles (41000 sq. mi.) a minimum of 64 aircraft search hours may be required.

Exposure. Pleasantly stimulating as a summer swim may be, the human body is very vulnerable to prolonged immersion in water, which carries off heat much more rapidly than air. The result may be "hypothermia" (insufficient heat), a condition which leads to disablement and death if not reversed quickly. The body's normal internal temperature of 98.6°F may be maintained by physical activity or shivering for a very few hours—no more than two hours if the water temperature is less than 60°F, according to most estimates. When the internal body temperature drops to 96°F, shivering becomes uncontrollable and intense; below 90°F of body heat shivering is replaced by strong muscular rigidity, and thinking is muddled. Below 80°F internal temperature unconsciousness sets in, followed by stoppage of heartbeat and breathing.

Note that the sea water temperature off the Charleston coast on December 18, 1981 was approximately 70°F. Without his raft the downed airman might not have survived the night (see survival chart).

Immersion in sea water with a life jacket also accelerates dehydration because of its salinity, which further weakens resistance to hypothermia. A life jacket is far better than no flotation aid at all and will suffice for short-term immersions, but time to rescue is something no one can predict for certain.

Heat retention. The lightweight water- and airproof coverings known popularly as "space blankets" (which fold up to the size of a cigarette pack), however handy, are of limited value when used alone. The downed military pilot found that his survival kit's "space blanket," being plastic, tended to condense his own body moisture at night and cause chilling. (The "blanket" is valuable for keeping off rain and sea water, and for collecting drinking water, but when used for warmth needs an insulating cloth liner.) His wool-stockinged feet, although continuously exposed to sea water, appeared to suffer very little. (Wool tends to dry from the inside out.)

Modern technology has made available many ultra lightweight flotation devices, including life vests that weigh as little as eight or nine ounces, plus an optional waterproof locator light. Rafts also come in light

weights and are deflatable into convenient packages for storing in the aircraft. In use they are inflated quickly by a tug on a lanyard. Even pilots who normally never venture more than a few miles from land and have no legal obligation to carry flotation devices may want to have the additional cheap insurance they offer.

Survival gear which is FAA-approved for overwater flights differ from those intended to be carried on surface vessels. The approved life jackets, for example, are all inflatable designs, as compared with boating jackets which may consist of solid bulky material —the latter are unsuitable for aircraft because they might block passage through the relatively narrow exits available to airmen. Note that any required flotation gear must be inspected at an official repair station —the manufacturer usually has this authority —within the past 12 months. Flotation gear for general aviation commercial operations is mandatory under the following conditions [(FAR 91.33 (b) (11)]: *"If the aircraft is operated for hire over water and beyond power-off gliding distance from shore, approved flotation gear readily available to each occupant, and at least one pyrotechnic signaling device."* There is no requirement for life rafts except for large and turbine powered aircraft (91.189)

One commercial pilot flew for years over the Florida Keys without getting his feet wet is now a confirmed believer in carrying life jackets on board, following a ditching in a twin *Apache* a quarter-mile offshore of a Keys Highway bridge near Marathon. He was demonstrating the aircraft to three prospective buyers when the engines died of fuel starvation at 1,500' and the plane went into the water. Not only did he lose the sale, but only the chance presence of a sailing yacht prevented his passengers from being swept by the current into the Bay of Mexico.

The *Apache* stayed afloat "about eight minutes" after hitting the water, and none of the four occupants was injured. However, the pilot had transferred his flotation gear to another aircraft, and so had nothing to offer his passengers, as they slipped into the water but his good wishes (the entire flight was conducted within a few miles of land). A strong (estimated five kt.) easterly current carried them toward the span of a mile-long bridge. The pilot and one passenger managed to catch hold of one of the bridge pilings. As the two other struggling passengers were carried by the swift tidal flow under the bridge toward the Bay of Mexico, their companion jumped into the water after them. The dark night swallowed them up from the pilot's sight, and it was only several hours later, after he had been rescued by Sheriff's officers, that he heard the good news: a passing sailboat, whose crew heard the hoarse cries of the three exhausted swimmers, had hauled them safely aboard. Regardless of how close to shore you fly, a simple life jacket stored deflated in seatback pocket can make the difference between a little excitement and a lot of serious trouble.

The advantages of the approved liferaft (containing flares, a manually operated ELT, survival kit, etc.) are very apparent to California ferry pilot Bruce Payne, who saw his companion pilot disappear into the Pacific while the two men were each ferrying, Cessna *AgTruck* to Honolulu. Although Payne circled over the ditching area for 5½ hours, no sign of the lost plane or pilot was ever seen.

WATER TEMP.	DURATION OF SURVIVAL	WATER TEMP.	DURATION OF SURVIVAL
32°F	less than an hour	60°F	2 to 24 hours
40°F	1/2 to 3 hours	70°F	3 to 40 hours
50°F	1 to 6 hours	80°F	Indefinite

The two *AgTrucks* had departed Santa Barbara (CA) Airport at 2:30 p.m. PDT on July 22, 1980, bound for Hawaii. About 1,000 miles out from Honolulu, Payne was informed by radio that oil pressure failure had developed on the other plane and it was going down. The time was 11:00 p.m. Honolulu Standard Time. Payne immediately radioed a Mayday call to the Coast Guard, via an air carrier passing at altitude, and then followed the ditched plane down toward the water. However, in the darkness he was unable to locate the pilot, who was equipped only with a life jacket, and he heard no signal. Payne, who had no way of calculating the drift of the waves in the dark or the original point of impact, could only circle endlessly in the general area. (Emergency locator transmitters on general aviation aircraft seldom function after a ditching once the antenna submerges or the electrical circuitry is exposed to water.)

At dawn Payne was relieved by a Coast Guard aircraft, which continued the search for two days without success. In the meantime Payne arrived in Honolulu without difficulty, but the baffling sense of helplessness he had experienced in trying to find the ditched pilot left him with an altered view-point toward survival gear. He knew that a raft, which would have contained a radio, signal flares, and perhaps a wateractivated beacon light, could have kept the downed flyer in view and alive long enough to be rescued. ■

Approved flotation gear ranges from sophisticated rafts to inflatible vests. Unofficial emergency aid (above), which can be stored in a shirt pocket, is a plastic garbage bag that can be "inflated" by twirling overhead, then pressing down on the water's surface.

Elusive Airports

The embarrassment of landing mistakenly at the wrong airport, or of being unable to find an airport which lies right under your nose, is one of those potential nightmares that haunts many inexperienced pilots and sometimes happens—even to not so inexperienced airmen. Air carrier captains, extremely red of face, have occasionally had to inform passengers that after a short wait, ground transportation would be available to ferry them across town from Podunk Municipal to their intended destination, Tri-State International.

Professionals flying in familiar runs are hard put to explain a mistake of this kind, but for general aviation airmen bound for an unfamiliar destination, airport identification is not always so simple. Some metropolitan or industrial areas have clusters of outlying airports, with several that look very much alike at first glance. For example, within a 45 mile radius of Chicago's Lake Michigan shoreline there are 60 airports officially indicated on the sectional chart—some within one or two miles of each other. Few of these are controlled, and although most have UNICOM, ground radio contact is not always immediately available.

Even in less populated areas identification may be a problem, since occasionally the physical appearance of several airports may be remarkably similar. Along the Tennessee River where it dips into northeastern Alabama, there are several look-alike airports with single runways similarly aligned, and with towers and power lines nearby. For example, Scottsboro, located approximately four miles west of the river, has a cluster of towers to the northeast. The runway directions are 03-21, extending 4,000'. About 15 miles up river, also located about four miles to the west, is Stevenson/Bridgeport Municipal, with its cluster of towers to the northwest and an 05-23, 4,000' runway layout. Both airports are 640' above sea level, and both have a railroad track to the east, a river bridge to the south and smokestacks a few miles upstream.

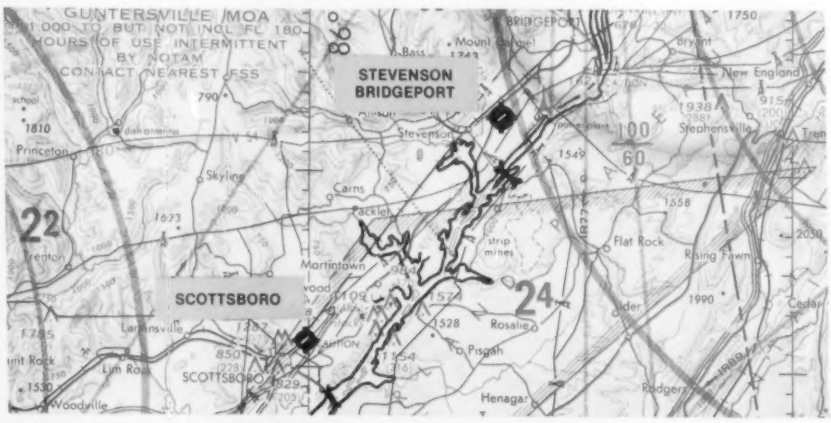
"Natural" cloning? Not exactly. If you looked closely at the chart you could see that Scottsboro has a dual-lane highway to the east, while Sevenson's nearest highway lies to the west, and is single-lane. The location of each airport with respect to the nearest town is also oppositional.

How do you identify an unfamiliar airport? (Do not count on a huge WELCOME TO PRETORIA sign lettered on a nearby hillside or water tower.) Identification signs are the exception rather than the rule nowadays. The runway configuration is a good, but not a conclusive clue. Natural landmarks like rivers or hills are useful, and so are man-made constructions, like towers, open air theaters, dual-lane highways, etc, but you must get into the habit of observing their relative bearing. One very positive means of identification that is often overlooked—sometimes out of foolish pride—is simply to ask the radio ground station operator if he has you in sight, or to please confirm the landmarks you see. That may sound a little overcautious, but if you have made a mistake it is less embarrassing to find out about it *before* you put your wheels down in the wrong cabbage patch.

Such was the experience of a recently certificated pilot from Chattanooga, TN following a short, simple flight from Dalton, GA in a Piper *Tomahawk*. The pilot had previously flown the 57 miles from Dalton to Scottsboro with his instructor on a training flight, so he anticipated no difficulty. He departed Dalton Airport at 11:30 a.m. on a bright clear November morning.

Airborne and cruising at 4,500', for some unexplained reason he was unable to contact Chattanooga FSS to file his flight plan. However, in view of the fair weather evident (and forecast in his briefing) and the short duration of the flight, the pilot saw no reason not to continue. He had no difficulty picking up his planned en route checkpoints as he proceeded on a 270° heading: dual-lane Interstate 75, Lafayette Airport and township, Lookout Mountain Range, Interstate 59, and finally the Tennessee River. As the river came into view he descended to 2,500' and looked around for Scottsboro Airport.

A glance to his left in the noontime sun presented him with nothing but sun glare off the river. He looked right and saw a bridge, and farther north an airport and smokestacks beyond it. He checked his chart, matching the landmarks with the airport, and concluded he was seven or eight miles south of Scottsboro. Turning right, he flew upriver and called Scottsboro UNICOM. No one replied, and the pilot became a little concerned. He rechecked the chart, and the landmarks still coincided. Maybe Scottsboro was just too busy to answer, he concluded. He flew on upriver and circled east of the airport until he spotted an airplane taking off to the northeast. He then entered a downwind leg for that runway and began to broadcast position reports.



Scottsboro and Stevenson—twinlike airports a few miles apart along the Tenn. River.

As he continued in the pattern everything seemed normal except that he did not remember the trees on final approach being so prominent but then the season *had* changed. He kept his altitude a little high to make sure he cleared the grove.

As he approached the runway his glide angle was slightly steep, and his airspeed crept up above normal. He flared a little too soon, pushed the nose back down, and struck the pavement nosewheel first about 800′ down the runway. The *Tomahawk* bounced back into the air and touched down a second time, again nosewheel first, 240 feet farther down the runway and left of the centerline. After a third bounce the pilot finally got the airplane to stay on the ground, but the nosewheel collapsed and the plane veered right and began to skid. The left gear struck a four-foot dirt bank beside the runway, then the plane rolled up the bank and flipped over on its back.

The pilot got out of the wreckage with a cut over his left eye. An ambulance was summoned, and he was taken to a hospital where the cut was stitched and he was released. En route back to the airport, the pilot noticed a sign that read, "Stevenson/Bridgeport Municipal Airport" and realized finally that he was at the wrong airport.

Since he had never been interested in Stevenson, he had not noticed how similar a picture it offered an approaching airman. Nor had he spotted the distinguishing characteristics that would have prevented his mistake: the relative positions of highways and towns.

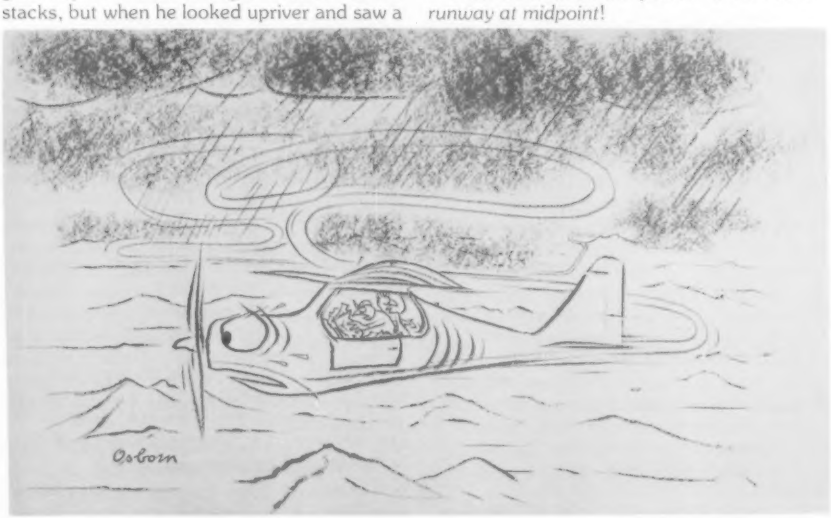
The investigation of this accident concluded that somehow the pilot had managed to drift north of his due west heading (possibly because he had not updated his winds aloft information in flight) and had actually crossed the Tennessee River well north of the smokestacks at Scottsboro. When he looked downriver, sun glare kept him from seeing Scottsboro or the stacks, but when he looked upriver and saw a bridge, runway, and stacks in a familiar configuration, he assumed he was looking at his destination.

Checkerboard effect of some types of farmland can make an unfamiliar airport difficult to pick out.

Another type of identification problem occurs when airports close down, are altered, or even removed to another site. Pilots who use outdated charts or who fail to check with flight service stations about the status of unfamiliar airports occasionally learn their lesson the hard way.

A 29-year old private pilot with 600 hours logged did his learning in his new *Cherokee*, while on a business trip from Wilgrove, NC to Rockwood, TN. The 250 mile trip went smoothly on this VFR day in December and the pilot easily spotted the runway while outbound on the 270 radial of the Knoxville VOR, about 10 miles from Rockwood. He made his approach based on the published field elevation of 1,664′ and recommended traffic pattern of 2,464′ MSL. On final, however, he realized he was much too high in spite of a carefully precise descent. He pulled off all power and used full flaps. Over the threshold he floated too long after flaring and decided to go around.

Then he noticed the powerline *across the runway at midpoint*!



Realizing he would be unable to climb over the wire, he managed to get the plane on the ground—only then he saw that the runway was pocked with potholes. While dodging them, the pilot failed to prevent his left wing from striking a telephone pole. The *Cherokee* slewed sideways and headed for a parked car. With heavy braking, the pilot got the aircraft stopped just a few feet from the car. He was unhurt but the brand new plane was minus one wing.

Looking around at the deserted field, he saw no other airplanes or people—only a few rundown buildings. What he had known once as a thriving airport looked like a ghost of itself.

When assistance arrived, he learned that he had landed at the *old* Rockwood airport, abandoned two years earlier in favor of a larger site. Both locations lay along the 270° Knoxville radial but the new airport with its 5,000′ smooth asphalt runway, was just over the next ridge, hidden from view at low altitude. Area pilots knew where to look, but some transients had a hard time locating it. Easily spotted, unfortunately, was the old Rockwood runway—elevation 800′ lower than the pilot's intended destination, which accounted for his excessively high approach. The old airport had never been built over, but had fallen into a sad state of disrepair and was obviously unsafe. It had been removed from aeronautical charts for some time, but had not been marked closed with "x's" on the runway.

FAA's Airport Facility Directory (revised every 56 days) is more up to date on airport changes than sectional charts, and provides more details, including the length, numbers and surface material of altered runways; building construction; NAVAIDS; and obstructions (both natural and man-made).

Some state aeronautical authorities provide state airport directories which include a picture or drawing of the airport and surrounding area. However, be advised that not every state publishes such an aid, and some that do may not keep them as current as the Airport Facility Directory. A talk with someone who has been to the airport and is familiar with its layout, identifying landmarks, and idiosyncrasies is a

good idea too. If a FSS or a flight standards district office is nearby, they would probably be familiar with its conditions. If not, and you are likely to arrive after dark or in poor visibility conditions, the price of a long distance call to the airport might be worthwhile. Last but not least, always fly over an unfamiliar airport and see what is going on there before you commit yourself to a landing.

Mis-identifying an airport is usually less of a serious problem than failing to find one when you are low on fuel, have an inflight emergency, or are beginning to run out of visibility. Over the two year period 1979-1980, 112 aircraft accidents took place in the United States as a consequence of the pilot's inability to locate a suitable landing field. The most conspicuous factors, by far, were *fuel exhaustion, adverse weather*, and *darkness*. Thirty-one of these accidents were fatal, with 66 fatalities, according to the National Transportation Safety Board. Most of these were VFR flights, and a good many accidents might have been prevented if the pilot had been able to locate an alternate airport.

VFR pilots often give little thought, during preflight planning, to an alternate airport, assuming that if they need to divert they will be able to navigate from the sectional chart. This may be easier said than done, especially if you are accustomed to flying strictly with the aid of VORs.

For example, a recently certificated young pilot (85 total hours) decided to fly himself and a friend from Norfolk, VA to Butler in central Pennsylvania to visit some relations. A navigator (a military non-pilot) in Navy tactical aircraft he flew mostly overwater missions and was well versed in sophisticated navigation systems. He booked a Cessna 150 he had been flying lately and checked the weather. Forecasts called for a VFR day —7,500' scattered sky cover, visibility five to seven miles in haze along his route, with westerly winds at 7 to 10 knots. The pilot planned to depart to the northwest toward Richmond, VA, then proceed to Casanova VOR, to Indian Lake Airport, and then directly to Butler, 25 miles northeast of Pittsburgh. The trip was about 300 miles; estimated flying time, three hours and ten minutes. The aircraft had three and a half hours of fuel on board. After picking up his passenger and attending to the baggage loading and preflight, the pilot departed Norfolk at 1255 p.m.

Two hours later, near Cumberland, MD, he checked Pittsburgh weather and found it was still VFR, although it seemed pretty hazy. At 4:00 p.m. when he came over Indian Lake, 53 miles southeast of Pittsburgh, he noticed his left fuel tank gauge read empty and he showed less than half a tank in the right cell. Since he was still a good 70 miles from his destination and his groundspeed was not what he had planned, he decided to land at the next airport and refuel. He consulted his chart and picked Westmoreland County, a controlled airport along his route, 30 miles beyond Indian Lake. He turned left 10 degrees to a heading that would take him to Westmoreland.

As he flew on course in the increasing haze, he failed to spot any of the checkpoints that would lead him to Westmoreland. When he concluded that he must have flown past it, he decided to land at Pittsburgh-Boquet, 11 miles ahead, instead of turning back toward Westmoreland. He flew over several dual and single-lane highways indicated on the chart as being near Boquet—but saw no sign of an airport.

He circled the area twice and still could not locate it, so he took up a heading for Butler, keeping an eye out for any one of several airports between his position and the upcoming Allegheny River. When he reached the river and observed the remaining fuel indication, he decided to turn upriver to find McVille, a complex of three grass strips (the longest 2,300') located 25 miles NNW of Pittsburgh, near Kittanning, PA. Located on a 90° bend in the river, it appeared on the chart to be in plain view (actually it was surrounded by woods).

While the pilot was searching vainly for any sign of the airport, the 150's engine sputtered and died. There was only one open field nearby, so the pilot headed straight for it in a 70-knot glide. He made a normal approach and full-flap landing, touching down in some tall grass. The aircraft rolled out with no problem and began to slow down in spite of a slight downgrade. Then the pilot noticed a drainage ditch ahead and applied full left rudder, but too late. The aircraft struck the ditch at about 20-25 mph and nosed down, causing substantial damage to the prop and engine. Neither occupant was injured. The pilot still had not found McVille. The accident had occurred eight miles northeast of the airport.

During the investigation of this accident the pilot stated that he had not radioed for assistance because he felt that as an experienced military navigator, he would be able to manage on his own. However, he was unable to pass the pilotage phase of a flight retest because *he could not adequately recognize ground references* on sectional charts. After additional dual instruction, he did pass another retest.

Whenever it becomes necessary to divert a VFR flight to an alternate airport, the pilot may have to fall back upon little-used pilotage skills for navigation, since waning fuel or daylight or other problems may not leave time to follow an indirect dogleg course using available VORs. Resurrecting these skills and trying to establish bearing, and distance to a diversionary airport, while busy flying the airplane, looking for landmarks, and perhaps fighting turbulence is likely to lead to errors.

Before you can plot a course to an unplanned alternate destination you have to know exactly where you are on the chart. If you are even slightly mistaken about your position, finding the alternate could prove very elusive. Airports often have a way of camouflaging themselves in the distant landscape, especially when the terrain is blocked off in rectangular, multi-colored patterns for farm sections. Shadows from partial cloud cover, sun glare, haze and smoke and fading daylight all can contribute to the problem of finding a diversionary airport—plus growing anxiety on the part of the pilot.

A twofold technique for avoiding such uncertainties involves setting up a *positive starting point*, and then establishing a *run-in point* adjacent to the intended diversionary airport.

For your starting point you need a physical feature on the chart which can be identified without question. The easiest way to establish this point is to do it during your preflight planning, on the ground. If you are planning to fly from Harrisburg, PA, for example, to Pittsburgh along V-12 and the weather is marginally VFR over the Alleghenies, you might want to set up Mt. Union Airport, at Shirleyburg as a midway alternate in case you decide it is not safe to continue over the mountains (Figure 1). A good starting point for this diversion would be the point where the north/south state highway (522) crosses your flight path. If you are on course you should be able to see a valley stream directly below your flight path, flowing in a loop close to the road and then turning north. Enough data for a positive fix, and close enough to the airport to be quickly verified. Money in the bank, if anything goes wrong.

A brief notation of this kind beforehand can eliminate considerable uncertainty—and perhaps a serious error—if the weather closes in on you en route. The only other possible diversionary airports in that vicinity are restricted, may be closed, and are difficult to find because of the mountainous terrain; so that if in haste you made a wrong choice you might easily become lost and be forced to make an off-airport landing.

Establishing a positive starting point while flying the airplane can be more difficult, but a little technique helps. Spotting a town with visible identification is ideal, but unlikely. Otherwise you want to look for a combination of

Helpful Hints While Searching for an Elusive Airport

- **Know what you are looking for.** Is the airport paved (shown as a solid colored symbol on sectionals); lighted; does it have intersecting runways or one strip; a rotating beacon (hollow star symbol); is it public, private, restricted (R), unverified (U), abandoned (X), or military?
- **Use the radio.** The nearest FSS will help you find your way, and may be able to give you directional steers if you ask. UNICOM operaters also usually know the area pretty well.
- **Note the minimum safe en route altitude** for your sector (large blue numerals) and the presence of tall towers (⅄ = over 1,000 AGL).
- **Reset directional gyros** as needed—more frequently when circling. Also remember you may need carburetor heat, if at reduced speed.
- **Judicious use of flaps** may improve pilot's range of vision by reducing angle of attack (lowering the nose).
- **When rain showers obscure windshield**, make S turns in order to see out through side windows.

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several distinctive physical features, such as a large bend in a river, microwave towers, or a mountain peak with a lookout post, or a lake near a river with a racetrack in between; an intersection of two highways under a power transmission line; a lookout tower near dam and a VOR site, etc. Any of these features alone would not give you a positive fix, but one reinforces the other.

The next step is to establish a course to the intended airport. This is an important step; directional "guestimates" can be grossly inaccurate. Pencil in a junction of north/south and east/west lines at your starting point, using latitude and longitude lines on your sectional as reference. Determine the approximate true course to the airport within the appropriate 90° quadrant. (If necessary you can draw two additional lines, separating the quadrant into 30° segments (Figure 2).

True course 030°

Next subtract the magnetic variation, 2° easterly in this case.

Magnetic course 028°

For a relatively short flight this compass heading should bring you within sight of the airport, unless there is a crosswind component of 20 knots or more. In that case allow for a few degrees of drift. Incidentally, the "minute" indications on the longitude lines correspond to nautical miles, so you can use it as a quick reference for distance to travel, and so establish your ETA. For better accuracy you may want to circle away from your starting point and then fly back directly overhead on the correct heading, traveling at anticipated speed. If the airport is not sighted within a few minutes after the ETA, reverse course and circle the ETA point with a gradually decreasing rate of turn (to increase the search radius) and call the ground station on your radio.

When the intended diversionary airport is small and indistinct, and possibly hidden away in a valley or by tall woods, you might want to set your initial course for a *run-in point*, consisting of a nearby landscape feature that is much easier to find—such as a volcanic peak, a sprawling town, a large lake, a distinctive butte, a homing beacon, etc. You should have little difficulty tracking to the airport after you reach this point (Figure 3).

If the need to locate an airfield arises from an actual inflight emergency, some or all of the navigational techniques discussed here may have to be dispensed with, because of the time factor. However, if partial power remains, it may be preferable to continue tracking toward a known run-in point or an alternate airport while contacting air traffic control, since this will make it easier for ATC to fix your position and help you locate the nearest suitable ground for landing.

Airports cover a lot of ground—over 2,500,000 acres in the United States, so it is always surprising how hard they are to find when you need one. But then, there are over 2.6 billion acres of land in the entire country. That gives you an airport to land mass ratio of about one to 1,000...something like the comparative size of a needle to a small haystack. You need to know where to look. ■

Editor's Note: The concept of run-in points and other techniques for finding diversionary airports were discussed in New Zealand's Flight Safety magazine, Vol. 8, No. 6, 1981. Some of this material was borrowed with permission from the New Zealand Department of Civil Aviation, Ministry of Transport.

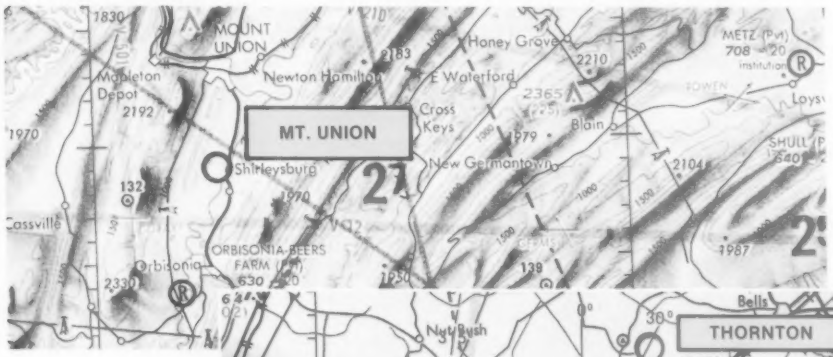


FIGURE 1

Mt. Union Airport (Fig. 1), three miles north of V.-12. Stream, road and town provide positive identification.

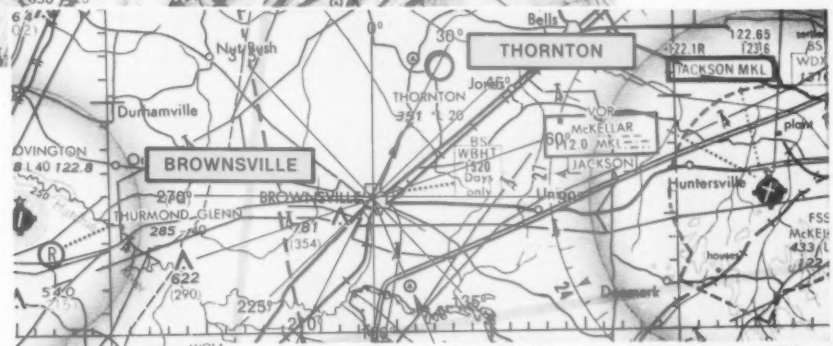


FIGURE 2

A positively identifiable town such as Brownsville (Fig. 2) can be used as a starting point for tracking to Thornton Airport.

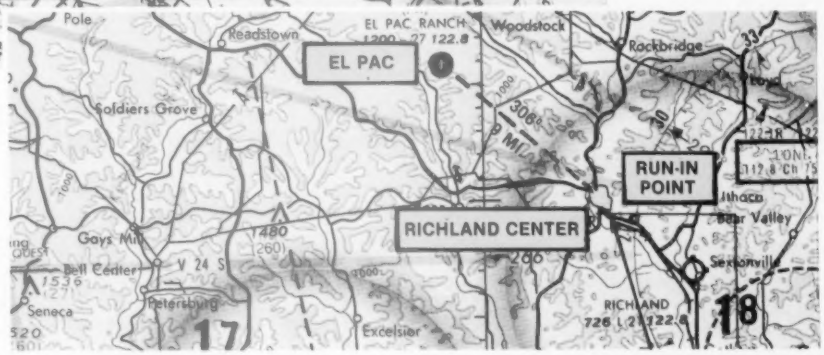
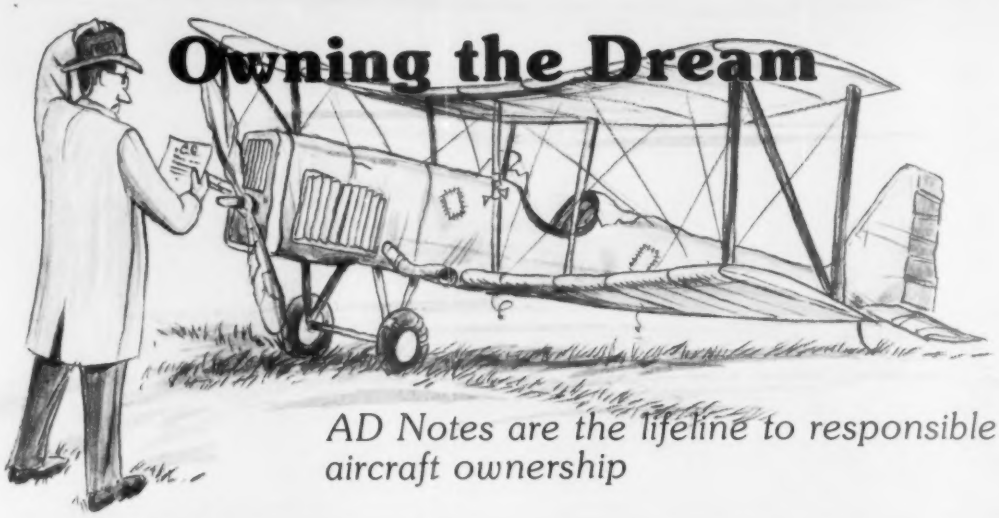


FIGURE 3

For locating a particularly elusive airport, track first to a nearby distinctive landscape feature. Here Richland Center (Fig. 3), a crossroads of four highways, serves as a run-in point.

Owning the Dream



AD Notes are the lifeline to responsible aircraft ownership

All winter long he and his 15 year-old boy had talked about almost nothing but their long-planned summer flight to Alaska. About how great it would be to get off by themselves, just the two of them, in the northern wilderness, fishing in crystal clear mountain streams and lakes, camping out under the stars and wandering wherever the spirit took them. For three years now they had been poring over catalogs, assembling lightweight camping gear, tracing routes over charts and studying aviation publications in search of a suitable used aircraft. It had to be a taildragger, of course, for off-airport landings, lightweight but sturdy, reliable and roomy enough for the long haul (estimated roundtrip, 4,500 miles), with enough power to handle floats on small lakes in the big woods.

It also had to be affordable. This was the stickler, as he could hardly believe how much used aircraft prices had shot up since his long ago high school days when WW-II trainers could be bought for a song, and he had bought into a Taylor *Cub* ownership with his paper route savings. That was eventually followed by a 20 year stint of military flying, and by the time he had become a civilian pilot again, inflation had necessarily limited his flying to weekend rentals. Despite some rigorous economies, the means for the Alaskan flight had remained a dream, and he worried about the boy growing up and leaving home before he could make it a reality.

The magic moment happened on the second Saturday in April 1980 when he and the boy had gone down to the marina to work on their sailboat. There it was, riding gently on floats at the end of the dock with a neat little FOR SALE sign hanging on a strut, a classic PA-12 *Super Cruiser*, the plane of their dreams. Power to spare, with that 135 hp Lycoming, plenty of room, with that expanded two-place rear seat, the gleaming yellow fabric still taut and resilient, the plexiglass clear and uncracked, the prop burnished and unmarred.

The price, as they learned when the owner strolled down from the boathouse, was something more than a song, but if the airplane was in as excellent a condition as it looked, and needed no additional expenses to ready her for their trip, the asking price was close to what they had budgetted.

A short demonstration flight confirmed their impression that the PA-12 had been beautifully maintained. When the prospective buyer was given the opportunity to "wring out" the plane himself, he was even more impressed. The engine purred like a well fed cat, and the controls in all configurations showed excellent response. He was tempted to whip out his check book on the spot, especially as the warm afternoon brought more visitors to the dock who were eying the plane with interest, but he restrained himself long enough to sit down in the cockpit and go over the maintenance logs.

The aircraft was 32 years old and had evidently known many owners. Some of the entries were faint scrawls and difficult to understand. However, it was clear that the engine, original installation, had undergone two major overhauls, and had logged 650 hours since the last one. The prop, which had evidently been replaced, had only 70 hours. There was no other indication of major repairs, and the sign-off for the last annual, in June of 1979, included the usual "...all Airworthiness Directives complied with" notation. He bought the "Yellow Bird", as his son dubbed the plane, and two went home in triumph to announce the wonderful news and begin packing for their Great Adventure.

Since the annual inspection period would expire before their return, the pilot put the airplane into the shop for inspection. When he came around to pick up his "Yellow Bird" he was handed a bill that nearly put him into cardiac arrest: $1,985.

The bill included nearly $1,500 worth of labor and materials for "airworthiness compliance." The mechanic explained that since the PA-12 was a recent purchase and scheduled to go on a lengthy trip into areas without maintenance facilities, he had taken the precaution of checking into all possible AD's that could possibly have applied to this make and model. His "tab" consisted not only of needed parts and labor; but also of time spent researching the AD's and disassembling various components in order to identify the manufacturer and part number, and to verify AD compliance as required by the regulations.

For example, he explained to the dazed pilot, he knew that an airworthiness directive effective March 24 of 1980 concerned certain Slick magnetos within a given range of model and serial numbers, assembled with impulse couplers bearing certain part numbers, approved for installation on many models of Lycoming and Continental engines, including the engine in the PA-12 *Super Cruiser*. Several instances of magneto failure had been traced to these particular parts, which were manufactured recently.

The PA-12 logbooks showed no recent magneto replacement, but such entries are not required as a part of the permanent record. He checked the identification plate on the magnetos in the "Yellow Bird" and found they were in fact Slick products within the affected range of model and serial numbers. There was no written record of previous compliance with this AD, and no compliance stamp ("C") on the plate. He removed the magnetos from the engine and disassembled the impulse coupler. The part number corresponded to the listing in the AD.

He then conducted the prescribed hardness test for the rivet heads

and pawls (devices affecting magneto rotation). The tests proved below standards, so replacement of the coupling assemblies was performed as required.

Similar tests and checks had been made for all applicable AD's for which there was no record of compliance. Fortunately not too many replacements were necessary.

"My God," the pilot groaned. "Why didn't you just replace the engine?"

"You asked me to get the airplane ready," the mechanic said. "I've told you before you're a great pilot, but if you ever get ready to buy somebody's airplane, let one of us look it over first. As it is, I think you were lucky."

From the safety point of view, the pilot realized, that was true. If he and his son had experienced magneto failure over some vast Arctic wasteland, the "Yellow Bird" could have ended its flying days on a very sour note.

Nevertheless he was unhappy about having to pay an expensive bill for repairs which were required maintenance under a previous owner. He considered filing a claim against the seller, or the latter's repair shop, but he was discouraged by his own attorney, who pointed out the difficulty of proving intentional non-compliance or fraud. Technically speaking, the old impulse coupler pawls had still been legal on the day he bought the airplane—the AD compliance deadline was two weeks off.

"How was I supposed to know that? I've been around airplanes all my life and I've never even heard of coupler pawls? Why should I get stuck with all that red tape?"

Actually so-called AD "red tape" is a means of protecting aircraft owners, and others who fly, from the consequences of design or manufacturers' errors that could lead to serious accidents. Airworthiness standards for all civil aircraft are established by legally enforceable rules (Federal Aviation Regulations, or FARs). Whenever an airworthiness rule is enacted that affects certain makes and models of aircraft, the owner of record is sent an AD note either via regular mail, or by telegram if urgent.

An airworthiness directive describes certain testing procedures, alterations, or replacement action which must be carried out for specified aircraft parts or components. Any aircraft which is not in compliance with an AD is unsafe and illegal to fly. *The owner or operator is primarily responsible for seeing that the airplane is flown only when airworthy.*

The owner or operator is also required to maintain a *permanent* record of the date of each AD compliance, and the manner of compliance. The log entries are made by maintenance technicians, but *the owner is responsible for preserving the record* in a reasonable manner.

Even so, the prospective buyer of a used aircraft has his work cut out for him if he tries to determine the AD compliance status of an aircraft for sale on his own—for obvious reasons:

1. **He does not have the AD's.** He could ask the seller for his list of recent AD's, but there is no requirement for keeping them and they could be incomplete (see below).
2. **Delays.** Owners or operators of aircraft may experience delays in receiving AD notes promptly, especially if they are part of a multiple ownership, or register the aircraft at an address other than their immediate abode, or are lax about informing FAA of their change of mailing address.
3. **Language.** AD notes are often written in a style that is necessarily legalistic as well as technical. A prospective owner—especially a first-time owner—could have difficulty understanding all he read or in relating the AD's to log entries.
4. **The long, long trail.** The records of many old airplanes, which may have undergone many alterations and part replacements, is hard to comprehend. Especially for an owner who is new to this type of aircraft ownership and not maintenance oriented.
5. **The multiplicity of parts.** AD notes often refer to individual components or parts or accessories provided by various manufacturers (other than the aircraft manufacturer). As with the Slick magneto AD discussed earlier, the note may affect only certain accessories of certain engines, and these engines may be installed in a variety of aircraft. Tracking down the suspect component may require technical knowledge and qualification, as well as considerable time and effort.

The new owner of the "Yellow Bird" learned the hard way that no airman who is not A and P qualified can make a reliable judgment about the mechanical condition of a used airplane. The older the plane and the more attractive the price, the more suspicious you should be.

To avoid becoming "plane poor"—i.e., financially unable to maintain a new acquisition in a safe and legal manner—get someone you know with an Inspection Authorization and a knowledge of the aircraft to examine it *before* buying. Never expect something for nothing; pay for the expertise you need. If you cannot afford that expenditure, you cannot afford the aircraft.

If a thorough inspection by a mechanic of your choice is not feasible, insist on the seller putting the aircraft through a current annual inspection, however much time that takes. You may lose a bargain purchase, disappoint a son forever or hate yourself for a few weeks, but you are not likely to make a fool of yourself or endanger someone's life.

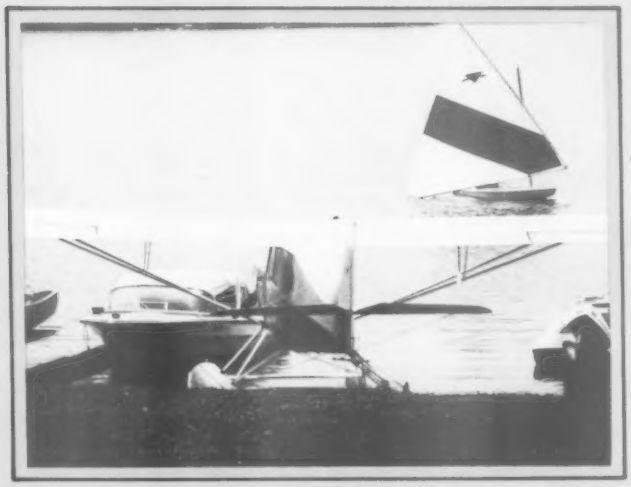
If you do acquire ownership you also acquire a set of responsibilities that you should know about in advance. Since AD's for parts which may be installed in a variety of aircraft are *not sent to aircraft owners normally*, you as owner or operator have to make some arrangement for keeping informed. You have several options:

- Subscribe to a reliable commercial service which will automatically alert you to all AD's they believe could affect your aircraft.
- Subscribe to the FAA service which mails out periodic summaries of AD's and bi-weekly updates.
- Enter into a maintenance contract with a repair shop that will keep you updated and perform the required maintenance.

The last alternative is probably the best (unless you are qualified to do your own maintenance) because a shop that works on your aircraft regularly and is familiar with it is in the best position to anticipate your needs.

As owner you will also find that being an efficient bookkeeper (however much you might hate this kind of activity) can contribute greatly to your peace of mind—as well as to the saleability of the aircraft when the time comes to part with it.

For example, a neat, easily readable summary of all significant maintenance work done during the 12 months since the last annual inspection, including parts replacement and AD compliance, would help make the aircraft's shop history an "open book." This is helpful to the current owner as well as to any prospective buyer, because it *could* bring to light some overlooked AD non-compliance, resulting in an unsafe condition which if uncorrected could lead to an accident in flight. Incidentally, any property damage or personal injury, resulting from an accident attributed to a non-airworthy condition, could bring on an expensive lawsuit,



"There it was, riding gently on floats. . . the plane of their dreams."

Photo by Nancy Roth

involving the owner of record as well as the repair shop.

Reviewing the AD's will also help you understand AD language better, so that you can take more personal responsibility for safeguarding the users of your aircraft—mainly your own family. The initial action on any AD must be accomplished by the owner or operator, when he receives notification from FAA. Usually he must put his aircraft in a repair shop within a given time period—sometimes before any further flights are to be made. In some cases an owner/pilot is authorized to carry out the procedures contained in an AD note himself; often he can inspect visually for compliance.

Remember: no one is as much interested in your safety as yourself, and while repair shops are general very reliable they occasionally make mistakes. If you just skim over an AD when it arrives, or continue to fly the airplane before compliance, you could be placing yourself and others in serious jeopardy. A recent tragic accident in Pennsylvania, fatal to a doctor and his entire family, underscores the dangers of relying blindly on the expertise of others.

According to the report filed by the National Transportation Safety Board, the pilot/owner had planned a Thanksgiving Day trip to Williamsport, PA (120 miles northwest of Philadelphia) to visit his wife's family. He and his wife and daughter as well as the two family dogs were aboard his venerable PA-20 *Pacer* when it departed Shannon Airport at Fredericksburg, VA at 6:30 a.m. The pilot's weather briefing called for VFR conditions throughout the day—clear skies, visibility 25, winds from the northwest at 9 knots, no turbulence. The *Pacer* had been fully fueled the night before. By 7:00 a.m. they were airborne.

Shortly after 9:00 a.m. several farmers feeding some cattle on a farm just outside East Berlin, PA (about 10 miles south of Harrisburg) heard a loud engine noise and looked up. An airplane, with one wing crumpled back along the fuselage, was diving nose first for a nearby plowed field. Seconds later it struck the field in a near vertical nose-down attitude. The force of impact partially buried the aircraft in the ground. There were no survivors.

Investigation by the Safety Board eliminated turbulence or engine failure as possible causes of this accident. The autopsy and toxicology reports indicated no physical condition that would have suggested pilot incapacitation. Investigators delved into the pilot's history and found him properly rated and current. He was known to be very meticulous about abiding by the regulations and spared no expense for maintenance.

Nevertheless, an examination of the aircraft records showed that certain portions of Emergency Airworthiness Directive 80-22-15, dated April 15, 1980, were six weeks overdue for compliance at the time of the accident.

The AD in question pertained to older Piper aircraft built shortly after World War II: models -22, -20, -19, -18, -16, -14, -12, J5, J4, L-21, L-18, L-14, L-4, AE-1, and HE-1. All of these aircraft have a high wing supported by struts attached to the fuselage frame. Fatigue-cracking at the point of attachment had been pinpointed as the probable cause of several recent structural failure accidents, leading to issuance of the AD.

As amended on November 3, 1980, the AD provided for replacement of certain models of strut forks, either immediately or at specified time-in-service limits; periodic inspection by dye penetrant and magnetic testing for fatigue cracks; replacement of cracked parts before further flight; and installation of the statement, "NO STEP", in letters at least one inch high, in a color contrasting with the airplane color, on each wing lift strut six inches from the bottom of the strut.

According to the NTSB report, magnaflux testing had been accomplished and replacement strut forks had been ordered. In the meantime, however, the aircraft had been returned to service. Examination of the wreckage showed no indiciation of the required NO STEP lettering. Post crash metallurgic testing disclosed extensive fatigue cracking in the strut forks. The replacement parts arrived a day after the fatal accident.

The probable cause of this accident was ascribed to "maintenance, servicing, inspection: inadequate maintenance and inspection." Whether a careful reading of the AD would have led to the owner's decision not to fly before the strut fork was replaced, it is impossible to say. But this tragic accident underscores the fact that as far as airworthiness is concerned, compliance with the letter of the law is not the last word in safety. Owner attentiveness may play a vital role. ■

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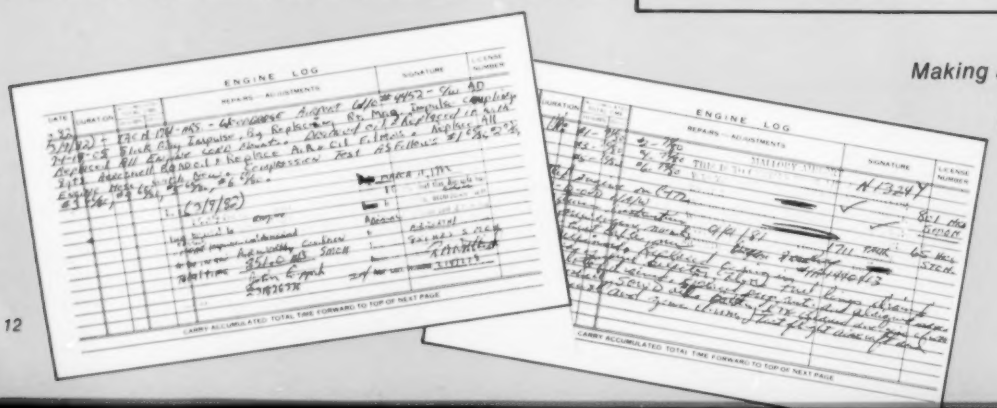
A free Advisory Circular on this subject, "Airworthiness Directive for General Aviation Aircraft," (AC 39-7) is available from DOT Publications Branch, M-443.1, Washington, DC, 20590.



Making an annual AD summary simplifies the task of deciphering time-faded log entries.

Max Conrad

Hero without a cause

If you were born in 1903, the year of the Wright Brothers' first flight, and you grew up near St. Paul, in the shadow of Minnesota's favorite son, Charles Lindbergh, and you had a thirst for adventure, the chances were pretty good you would try your luck on aviation's glory trail. Maximillan Arthur Conrad, Jr., son of a prosperous furrier from Winona, MN, was 25 years old before he discovered his love of flying, but once "hooked" he became totally involved, almost to the point of obsession. Not even a tragic accident at the outset of his career was able to deter him from achieving a unique place as a hero-airman in the eyes of millions.

The accident probably would never have happened if he had not been so tired. He had been working, characteristically, with little or no sleep for seven days a week, organizing a flying school. He himself had soloed scarcely a year earlier in 1928, but after only a few hours of dual Max found that flying came so natural to him that he needed nothing but an airplane to discover everything about it for himself. He had promptly posted his shares of the family business stock as collateral to acquire a fleet of seven airplanes, rented an open field at the edge of town, and was in business.

From the outset Max was evidently as poorly endowed with business sense as he was eminently suited for flying. His efforts to acquire wealth or even a stable income from an aviation venture were doomed by under-capitalization and over-imagination. Ill-suited for dealing with partners or employers and burning with enthusiasm, he attempted to supervise flight training while drumming up cash trade with local hops and demonstration flights. On an ill-fated Sunday Max could not resist taking up several paying passengers for a short flight. The propeller was still spinning, after landing, and Max was relaxing in the cockpit when one passenger, a lighthearted young woman, decided to exit the plane by jumping down over the leading edge of the wing. Realizing what she intended Max flipped off the ignition switch and hurled himself out of the cockpit to her rescue. The last thing he remembered was grabbing for her hand.

The girl was killed and the pilot severely injured. A tip of the blade had crushed part of his skull and sliced into the left side of his brain. The doctors told the family that the situation was hopeless.

For five days Max remained in a coma, the extent of the brain injury unknown. Finally, he opened his eyes and looked blankly at his mother. He was alive, but he knew no one and nothing about his previous 26 years of life.

In addition to having been a pilot Max was also a talented (self-taught) musician (on many instruments) with published songs to his credit; and a champion junior high jumper who had tried out for the Olympics. He had also studied engineering for five years in four different colleges. Nothing remained.

Friends and relatives attempted to rekindle his memories of places and things that had meant much to him in the past, with little success. Even his airplanes evoked no glimmer of interest. Then one night while Max was wandering around the house, he looked out the window at the moonlight and felt a sudden urge to fly. He walked the four miles to the airport and pulled his favorite plane, a *Spartan*, to the runway. As in a dream he started the engine and began his takeoff.

Once airborne he suddenly became terrified, as a host of questions flooded his mind. *How did the controls work?* The instrument panel showed him only meaningless dials. One by one he tried the various buttons, knobs and levers, hoping that something would click in his bewildered brain. Gradually, the controls began to look familiar. Vague words began running through his brain of what he had to do. Finally, the plane was flying straight and level and Max had time to look around and enjoy the flight with a sense of knowing exactly what to do. Memories had been reborn.

From that moment his process of relearning who he was and what he was moved steadily ahead. When Max was almost back to normal he married Betty Biesanz, a farm girl and childhood sweetheart. She understood his temperment and his obsession with flying, and willingly stayed in the background as fulltime wife and mother—nurturing 10 children over the next 12 years.

Conrad Aviation stayed in business during the 30's depression, performing every type of flying from flight instruction to airplane rides for a dollar. Charter flights also became part of Max's flying life, as his cheerful, always available, "have plane-will travel" attitude attracted all manner of well-to-do travelers, including a few fugitives from justice.

By June 1939 the new Civilian Pilot Training Act had been signed into law, with a first year's quota of 11,000 civilian pilots. This was right up Max's alley and by early 1940's he had set up courses in six colleges around the Winona area. After Pearl Harbor these schools became a military operation, and beyond Max's capacity to manage. In June of 1942 he brought his aircraft fleet back to Winona, only to see them destroyed in a hangar fire. Max had little to show for 10 years of energetic flying, and Betty had a brood of seven to feed.

He finally took a job as a bush pilot for Northwest Airlines, ferrying supplies as far north as the Arctic Circle. Max was away a great deal of the time and and missed his family, but he was thankful to have job.

(Continued on back cover)

FRIENDS OF THE SKY. A Minneapolis-based aero club has come to the aid of their feathered flying forebearers. Twin Cities Cloud 7 Flying Club provides free transportation for injured or sick birds to the University of Minnesota Raptor (bird of prey) Center. The club's 50 members and four aircraft have flown dozens of endangered birds, including hawks, eagles, ospreys, falcons, and owls in the five-state upper midwest region, to the Raptor Center's specialized facilities. "Patient" is a red-tailed hawk.

CANADIAN FLIGHT RULES

For pilots headed for the cooler climes of Canada this summer, there have been a few changes in the rules which affect U.S. pilots entering Canadian airspace.

First of all, Canada now conforms to the even-odd thousand plus 500 foot rule for VFR flights. As in the U.S. headings between due north and 179° should be flown at altitudes of odd thousands plus 500 feet; headings between due south and 359° should be flown at even thousands plus 500 feet. Prior to this change VFR flights in Canada were conducted directly at altitudes of odd or even thousands.

Furthermore, all Canadian aircraft and all aircraft operating in Canada must now carry one or more emergency locator transmitters, except for flights in the vicinity of an airport or over heavily settled areas. Also, "Aeradio" Stations are now called Flight Service Stations and provide much the same services as their American counterparts. Customs officials have cut back their duty time by one hour and are only on the job weekdays from 9 a.m. to 5 p.m. local times. Scheduled half-hour weather broadcasts are no longer made.

Canada also requires specific survival gear be carried and in recent years has added some more required items to the list for flights over sparsely settled areas (90% of Canadian territory). In addition to enough food, cooking utensils, matches, pocket compass, axe, snare wire, fishing equipment, mosquito netting and insect repellent, sleeping bags, and a hunting knife, the following must also be on board: a stove and supply of fuel, tents or engine and wing covers (to stretch out for signalling), two pairs of snow shoes, a signalling mirror, at least three flares, a survival manual, and a flexible saw blade.

There are now certain Mandatory Frequencies for uncontrolled airports which have a ground facility on the field. The frequencies are designated on Canadian aeronautical charts. In the blind, use 123.2. Otherwise, 126.7 MHz should be used for position reporting and aeronautical advisories to FSS.

Carriage of up-to-date Canadian aeronautical charts is strongly encouraged. For a listing of current chart prices and the cost of other Canadian publications that might be useful, write for a free copy of "List of Civil Aviation Publications," Transport Canada, Place de Ville, Ottawa, Ontario, Canada, K1A 0N8.

"SPECIAL ISSUANCE" PROCEDURE EASES MEDICAL CERITIFCATION

A rule change effective May 17, 1982 makes it possible for airmen with disqualifying medical problems to apply for certification without having to go through the lengthy process of petitioning for an exemption.

The new rule allows the FAA—in some instances a regional flight surgeon—to grant a special issuance or "waiver" in any acceptable medical case. In addition to detailed medical evidence, the successful completion of a practical test or a flight test, previous operational experience, and the prognosis for the applicant's medical condition may be considered in the certification decision.

Also, in considering special issuances for a third class medical certificate, FAA will consider that the applicant is willing "...to accept reasonable risks to his or her person and property that are not acceptable in the exercise of commercial or airline transport privileges..." FAA would also have the option of putting a time limit on the certificate or impose any limitation deemed necessary for safety reasons.

Also under the rule change, a person who can show satisfactory clinical evidence of recovery from alcoholism, including total abstinence from alcohol for the preceeding two years, may receive medical certification under the standards. Previously, a history of alcoholism required denial unless an exemption was formally applied for and granted.

The new rule also makes explicit FAA's long-standing practice of regarding *any* manifestation of significant coronary heart disease—whether it leads to myocardial infarction or not—as grounds for disqualification under the medical standards. However, the disqualified applicant may now apply for a special issuance.

The full rule changes were published in the April 15, 1982 *Federal Register*. Questions should be addressed to William H. Hark, M.D., Aeromedical Standards Division, Office of Aviation Medicine, 800 Independence Ave., S.W., Washington, DC, 20591; (202) 426-3802.

BORDER CROSSING REGULATIONS TIGHTENED IN SOUTH

Increasing activities of airborne drug smugglers have prompted FAA and the U.S. Customs Service to tighten some rules for flights into the U.S. via the U.S.-Mexico border, the Gulf coast, or the Atlantic coast.

Now *all* aircraft flying over water through the south Florida off-shore Air Defense Identification Zones (south of the 30° parallel and east of the 86° meridian) will have to file flight plans and make periodic position reports to an air traffic facility. Previously only aircraft flying at speeds of 180 KTS or greater were required to do this. Those aircraft that do not report upon entering the ADIZ or that do not have a flight plan on file may be considered suspect and may be intercepted.

Additionally, U.S. Customs now requires all private aircraft entering the United States from foreign countries south of the 31° parallel to land at the Customs-designated airport of first landing nearest the point where they cross the border or coastline. Previously private aircraft only had to report crossing the U.S. border and were then permitted to land at any customs-designated airport of first landing.

The following are Customs designated airport:

- Bisbee Douglas International, AZ
- Nogales International, AZ
- Tuscon International, AZ
- Yuma International, AZ
- Brown Field, San Diego, CA
- Calexico International, CA
- San Diego International, CA
- Ft. Lauderdale Executive Airport, FL
- Ft. Lauderdale International, FL
- Key West Airport, FL
- Miami International, FL
- Opa Locka Airport, FL
- St. Lucie Co. International, FL
- Tampa International, FL
- West Palm Beach Airport, FL
- Moissant Airport, New Orleans, LA
- Brownsville International, TX
- Corpus Christi International, TX
- Del Rio International, TX
- Eagle Pass Airport, TX
- El Paso International, TX
- Hobby Airport, Houston, TX
- Jefferson Co. Airport, Beaumont, TX
- Laredo International, TX
- Miller International, McAllen, Tx
- Presidio Lely International, Presidio, Tx

• Alternate Air

Your article in the March/April 1982 issue concerning induction system icing says, "...when the ambient temperature is above 37°F, the pilot need not be concerned with icing in an induction system where only air passes the throttle, as is the case with fuel injected engines and certain other systems."

I own a Mooeny 201 airplane with a fuel injected engine. The plane has no carburetor heat control and no pilot-operated alternate air control. What advice can you give me for operating the 201 when the temperature is 37° or below?

Bill Roberts
Pacific Palisades, CA

The alternate air door on fuel-injected aircraft is not pilot-operated. It is spring-loaded and held closed by air from the normal intake flowing over it. When that airflow ceases, the door automatically opens. Provided the door on your aircraft is operating properly, you should have no worry about alternate air being available, unless the system becomes blocked by impact ice. Remember that alternate air is not heated, normally, and therefore will be slow to dissolve ice. Consult your pilot operating handbook for approved cold-weather operating procedures.

• Change of Heart

I read with interest the article "Affairs of the Heart." (January/February 1982). I wondered how many pilots are giving false medical histories in order to protect their flying status and/or job security. When a pilot comes to what seems to be the end of his flying career because of health, he is faced with what appears to be only two choices: 1) quit flying, or 2) cheat. The temptation may be too great for some—as evidenced by your article.

I would like to inform your readers and my fellow pilots that there is an alternative to these two choices: a reversal of the health problems by lifestyle change. It has been well-established now that heart disease, hypertension, some types of diabetes, arthritis, and others can be prevented or treated by proper diet and exercise. In some cases medication can often be discontinued. This lifestyle change should of course be made under the care of a qualified physician. There are several medical centers in the U.S. that will provide counselling on how to achieve this new lifestyle.

It is best for pilots to take action before their airman's medical certificate is denied. I hope this will be good news to grounded or about-to-be grounded pilots.

Vernon D. Putz
Weimar, CA

MOVING?

Magazines (3rd class mail) are not forwarded by the Postal Service. Unless you let us know your new address, you could miss your bi-monthly safety briefing via **FAA GENERAL AVIATION NEWS**. Please send both old and new addresses to Superintendent of Documents, Government Printing Office, Washington, DC, 20402. Allow six to eight weeks for processing.

• Literary Standards

Your *FAA General Aviation News* is an informative and enjoyable magazine, and I wish it were both longer and published more often. "Forum" is especially helpful; almost every issue answers some question on my mind. Another positive feature is the higher literary standards than that which characterizes some other government publications. I am constantly appalled at the grammatical problems and misspellings. This past issue, I really enjoyed the article "The Good Old Days." The techniques illustrated in it are probably not so far away as one might think.

Thank you for your fine magazine. If it weren't already such a worthy instrument I wouldn't bother to write.

Dr. Newton W. Miller
Waco, TX

Ain't that grand?

• Model K Missing

In your excellent "Famous Flyers"—January/February 1982 issue—you covered the development of the "Poor Man's Flying Flivver" quite well. However, you did neglect to mention one state in the Aeronca evolution. As a proud former owner of an Aeronca Model K, serial number 13, NC17495, manufactured in May 1937, I felt abashed that this dandy aircraft was excluded. I have spent many enjoyable hours flying this outstanding aircraft, which I believe was the immediate successor to the C-3.

Don E. Bennet
San Francisco, CA

We did not mean to slight Model K owners, but there were so many different models from prolific Aeronca that space did not permit us to mention them all. The Model K was the low-wing version of the "Flying Bathtub" as some Aeroncas were called.

• Transporting Propane

I am considering purchase of a portable engine preheater to carry on board my aircraft when I travel in the winter. This would include, of course, its fuel supply of propane gas. Is there some problem with transporting pressurized gas containers in an aircraft?

Richard Polorski
San Francisco, CA

As long as the aircraft were not being operated in commerce and strictly for the pilot's personal use (for hire to carry passengers or cargo), the pilot needs no special authorization to carry a compressed gas container.

• Control Zones—"Weather" or Not

I have just finished reading the "Forum" reply to "Special VFR and Closed Towers." (March/April 1982) I fear you may have confused the special VFR requirements and the control zone issue. Isn't it true that when weather reporting is not available, the control zone is not in effect? Or is my interpretation of control zones incorrect?

David E. Moran
Minneapolis, MN

The hours of operation of control zones are established or rescinded only by regulation or by NOTAM if provided for in the rule that establishes the specific control zones. Please see the January/February issue of FAA GENERAL AVIATION NEWS for a further explanation.

• Engine Errata

In the *Flight Training Handbook* (AC 61-21A) on p. 247 it says in "Engine Failure During Flight" (for twins) in step #7 to establish a 7° to 10° bank toward the *inoperative* engine. Shouldn't it read, "Establish bank toward *operative* engine?"

Dan Verwest
Austin, TX

You are correct. The step should be, "Establish at least a 5° bank TOWARD THE OPERATIVE ENGINE." Some of the handbooks were sold before this error was found and corrected in subsequent issues. Please make the change in your copy. And thank you.

FAA GENERAL AVIATION NEWS welcomes comments from our readers. No anonymous letters will be used, but names will be withheld on request. Address: FAA GENERAL AVIATION NEWS, AFO-807, Washington, D.C. 20591.

• Instrument Infallibility

Your warning about carburetor and induction icing are well advised. Of the several such experiences I have had, none seemed justified by the prevailing conditions at the time—only in retrospect. One incident that particularly stands out in my memory should have been predictable, but it occurred in an airplane with a carburetor temperature gauge.

During the flight in marginal VFR conditions (low overcast and rain), I experienced a very gradual drop in manifold pressure that was easily compensated for by adding throttle. The carburetor temperature gauge registered reassuringly in the green at all times. Approaching my destination I called air traffic for a special VFR clearance and found out that an IFR flight was expected shortly. So I circled outside the area for ten minutes, all the while adding more and more throttle to alleviate the continually dropping MP. Upon landing the engine sputtered and then ran normally. I realized that I had had ice and that it must have broken loose on landing. Later I talked with some instructors and was told that the ice may have formed in an areas of the carburetor throat where the temperature sensor was not located.

I have learned—almost the hard way—that carburetor temperature gauges are not always infallible for ice detection and that carburetor heat should at least be tried if there is no explanation for a power loss.

Robert Clark, Jr.
Kansas City, MO

A good lesson. It never pays to ignore the airplane when it is trying to tell you something.

• Log Mistakes

When making an entry in a pilot logbook, if an error is made, what is the proper procedure to follow in correcting it? Do the FARs address this?

Shawn Knickerbocker
Ft. Bragg, NC

The only rule on this subject, FAR Part 61.59(a)(2), says that no person may make an "intentionally false" entry in a logbook or alter an entry for fraudulent purposes. If an unintentional mistake is made, simply draw a line through the entire entry and move to the next available space.

INSTRUMENT CORNER

• IFR Instructor Currency

I am in need of an official interpretation of FAR 61.51(c)(4) (Instrument Flight Time) and 61.57(e)(1) (Recent IFR Experience). Can a flight instructor log approaches flown by his student while in instrument conditions, and may he use those approaches for his own currency under 61.57? When logging approaches under 61.57 for currency, does the approach have to be made to the minimum altitudes for that approach before leaving instrument conditions, or must the approach only be started to count toward currency?

Thomas C. Wright
Columbus, OH

An instrument instructor may log as instrument time the time he acts as an instructor in actual IFR conditions. This includes any approaches flown by his instrument student, and he may apply them toward his own instrument currency. In order to log approaches toward IFR currency the approaches must be carried at least through the so-called critical elements. This could include conducting the approach to a landing, to the minimum altitude and/or missed approach point, or through the approved missed approach procedure.

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(Continued from page 13)

His stint as a bush pilot lasted until 1943, when he became chief pilot for Minneapolis Honeywell Co., a well-paying job which allowed him to give instruction on the side. In anticipation of his new wealth he moved the family to Minneapolis and bought an enourmous house, heavily mortgaged, in the suburbs. He was seldom there, as his job kept him constantly on the go to far corners of the country.

Betty was left pretty much on her own to rear the children, manage their "estate" and cope with increasing indebtedness. Max came home one summer day and saw that the beautiful, healthy young woman he had married was close to physical and emotional collapse.

His solution was characteristically radical. She would leave for a year's vacation in a Swiss Alpine village. He had heard of a boarding house where meals and childcare would be provided at very low cost. He would rent out the big house to cover expenses and he would lodge in a small outbuilding on their land. Too weary to protest, Betty packed up and left.

By Christmas their financial picture had eased, but Max was desperately lonely and took a ship for Europe to spend the holidays with his family. He found the children thriving on the mountain air and Betty so radiantly healthy that he did not have the heart to bring her back. One year abroad stretched into two, and Max could not afford any more transAtlantic voyages.

Again he solved the problem in a radical way. Flying over Piper's headquarters in Lock Haven, PA one day in 1950 he swooped down for a meeting with the president, William Piper. Max noted the new Piper line of PA-20 *Pacers* were not selling well in the post-war economy. *How about publicizing this fine little airplane by flying it solo across the Atlantic?*

Piper agreed to sell Max a new plane for one-fourth price if he made it a round trip to Europe. Their deal launched Conrad on a new career that was eventually to make his name a household word and solve his economic woes, as well as re-unite his family.

Commercial flights from New York to Paris were routine, but the arrival of a tiny 1,000 lb. airplane, with the lone pilot walled in between extra fuel tanks, evoked memories of the immortal Lindy. The press was on hand to witness his landing, along with a sizable crowd which included Betty and nine little Conrads.

Over the decade of the 1950's Max established a special niche for himself as a long-range ferry pilot, delivering aircraft not only to Europe but also to South America, Africa, Australia and the Orient—all over the world; and setting dozens of speed records in the process. Every new aircraft model that rolled out of the Piper plant was a challenge to his imagination as a publicist/pilot. *Chicago to Rome? El Paso to Casablanca? Tallahassee to Tasa Del Fuego? Around the world in eight days, via Hawaii, Singapore, Bombay, Nairobi, Dakar and Trinidad?*

The press and the public ate up his exploits, which filled a void in the wishful imaginations of many whose lives seemed dull and commonplace. At an age (58) when most men were living quiet, retired lives and fondling grandchildren (Max's third generation eventually totalled 26) here he was making solitary flights to storied cities of history—at the same time keeping himself alert by composing songs en route for popular sale. Retaining his lean, lanky, muscular outdoorsman look, Max was an inspiration to older people everywhere who wanted to bring adventure back into their lives. A whole new market for lightplane ownership opened up, and Max Conrad, the "Flying Grandfather" was their hero.

Income from his flights, song sales and personal appearances enabled Max to establish a new family home in Prescott, AZ in 1964. He attempted to retire gracefully, but it was not in his restless nature. He had already logged nearly 50,000 miles, but one more challenge remained: a flight around the world over the two poles—no one had ever done it.

After nearly a year of preparation, Max took off along in a Piper *Aztec* from St. Louis and headed for Alaska via Calgory. From Point Barrow he flew over the North Pole, using a "polar compass," to Norway, and then on to Paris, Casablanca, Rio de Janerio and finally Punta Arenas on the southern tip of Chile. On Christmas Eve he touched down in Antarctica at Adelaide, a British scientific station. U.S. Naval support forces were standing by in case he had trouble crossing the Polar wasteland.

Snow and fog bound for three weeks, Max was faced with the most painful decision of his life. Testing the aircraft with skis installed and the enormous load of 80 octane fuel on board (the specified 100 octane was not available) he was under-powered and over-loaded. Even going back safely to Punta Arenas over the stormy seas of Drake's Passage was doubtful, but at least he could remove the skis. Reluctantly he did so.

The national honors that were showered on him after his return did nothing to soften the gloom of defeat. A few months later he was planning to try it again, this time starting toward the Antarctic. He reviewed the problems and mistakes of the early polar flight and was certain he could eliminate them.

On November 30, 1960, at the age of 66, Max Conrad and his *Aztec* set out for the South Pole via Hawaii and Australia. Despite a host of mechanical problems en route he eventually landed on the sunken crater that is the Pole and stepped out of the aircraft on "a bright Spring day" with 35° below zero temperature. The worst now seemed behind him as he took off from the polar air strip successfully despite a heavy load, but a sudden loss of altitude caused one prop to smash against an ice outcrop, and the airplane crashed.

Max survived, but it was his last adventure. He died in Prescott in 1979. A statement he made about himself while still a young man might have made a fitting epitaph: "In all things I fail, except that I keep on trying."